

WHAT IS CLAIMED IS:

1. A method for cutting metal, comprising:  
heating a metal locally to a molten state;  
removing the molten metal from the local area using  
pressurized gas;

5 directing the molten metal away from the operator,  
but on the same side of the metal to which heat was  
first applied;

adjusting at least one of the position and strength  
of the heat source with relation to the molten metal  
10 so the molten metal flows out of the local area making  
a cut; and

moving the cutting torch in a direction generally  
parallel to a desired cut line to expand the cut line.

2. A method for cutting metal according to claim  
1, wherein a cutting trench is created when the molten  
metal is removed from the area.

3. A method for cutting metal according to claim  
1, wherein adjusting the position and strength of the  
heat source comprises varying the distance from the  
cutting tip to the metal and the flow rate of the  
5 oxygen.

4. A method for cutting metal according to claim  
1, wherein heating a metal locally to a molten state  
comprises making the metal almost molten, adding  
additional pressurized gas causing the metal to become  
5 molten.

5. A method for cutting metal, comprising:  
heating metal locally to a molten state by holding  
a cutting torch generally perpendicular to the surface  
where the cutting torch has a two-part tip which  
5 releases both a combustible gas and a combustion  
enhancing gas and generally in the same direction and  
has a control means for gradually changing gas  
pressures;

directing the gases at the molten metal at an angle  
10 of incidence ( $\alpha_i$ ) with a horizontal plane of the  
molten metal of at least about 45 degrees and  
increasing the flow rate of the combustion enhancing  
gas thereby removing the molten metal from the local  
area creating a cutting trench;

15 maintaining an angle of incidence ( $\alpha_i$ ) of at least  
about 45 degrees to remove the molten metal from the  
cutting trench so that the molten metal exits the  
cutting trench in the same direction as the angle of  
reflection ( $\alpha_r$ ) away from the operator, but on the  
20 same side of the plane of the metal on which the  
cutting torch is located;

moving the cutting torch in a direction generally  
parallel to a desired cut line to expand the cut line;  
and

25 varying at least one of the distance from the  
cutting tip to the metal and the flow rate of the  
oxygen so as to provide heat making a cut.

6. A method for cutting metal according to claim  
5, wherein air said control means for gradually  
increasing gas pressure comprises an easy-on air  
lance.

7. A method for cutting metal according to claim  
5, wherein the combustible gas is propane and it is  
adjusted between about 35 to 80 psi.

8. A method for cutting metal according to claim  
5, wherein the combustible gas is chemtane and it is  
adjusted between about 35 to 80 psi.

9. A method for cutting metal according to claim  
5, wherein the combustion enhancing gas is oxygen and  
it is adjusted between about 150 and 220 psi.

10. A method for cutting metal according to claim  
5, wherein the combustion enhancing gas is a dual  
liquid oxygen source.

11. A method for cutting metal from ships,  
comprising:

heating metal locally to a molten state by holding  
a cutting torch generally perpendicular to the  
5 surface, where the cutting torch with control means  
has a two-part tip which releases both a combustible  
gas and a combustion enhancing gas in the same general  
direction, with the combustible gas adjusted between  
about 35 to 80 psi and oxygen adjusted between about  
10 150 and 220 psi;

directing the gases at the molten metal at an angle  
of incidence ( $\alpha_i$ ) with a plane of the molten steel of  
at least about 45 degrees and increasing the flow rate  
of the combustion enhancing gas, thereby removing the  
15 molten metal from the local area creating a cutting  
trench;

maintaining an angle of incidence ( $\alpha_i$ ) of at least  
45 degrees to remove the molten metal from the cutting  
trench so that the molten metal exits the cutting  
20 trench in the same direction as the angle of  
reflection away ( $\alpha_r$ ) from the operator, but on the  
same side of the plane of the metal on which the  
cutting torch is located;

moving the cutting torch in a direction generally  
25 parallel to a desired cut line to expand the cut line;  
and

varying the distance from the cutting tip to the  
metal and the flow rate of the oxygen so as to provide  
heat making a cut.

12. A method for cutting metal according to claim  
11, wherein the control means is an easy-on air lance.

13. A method for cutting metal according to claim  
11, wherein the two-part tip is size No. 6 through No.  
10 cutting tip.

14. A method for cutting steel from ships comprising:

heating steel locally to a molten state by holding a cutting torch generally perpendicular to the surface where the cutting torch is a propane-oxygen cutting torch having a two-part No.8 Propane straight tip which releases both propane and oxygen in the same general direction, with the propane adjusted to about 60 psi and oxygen adjusted to about 200 psi, and having an easy-on air lance;

directing the propane-oxygen gases at the molten steel at an angle of incidence ( $\alpha_i$ ) with a plane of the molten steel of at least about 45 degrees and increasing the flow rate of the oxygen thereby removing the molten steel from the local area creating a cutting trench;

maintaining an angle of incidence ( $\alpha_i$ ) of at least about 45 degrees to remove the molten steel from the cutting trench so that the molten steel exits the cutting trench in the same direction as the angle of reflection ( $\alpha_r$ ) away from the operator but on the same side of the plane of the steel on which the cutting torch is located;

moving the cutting torch in a direction generally parallel to a desired cut line to expand the cut line;

varying the distance from the cutting tip to the steel and the flow rate of the oxygen so as to provide heat making a cut.